

swiss re tower

Address: 30 St Mary's Axe, City of London, England, UK

Date: 2004

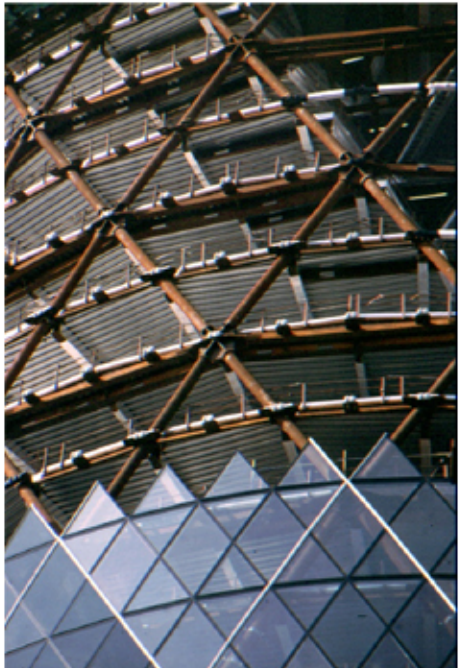
Design: Foster + Partners - UK Architects led by Norman Foster

London's first ecological tall building and an instantly recognisable addition to the city's skyline, 30 St Mary Axe is rooted in a radical approach - technically, architecturally, socially and spatially. Generated by a radial plan, its energy-conscious enclosure resolves walls and roof into a continuous triangulated skin, allowing column-free floor space, light and views. The external diagonal steel structure uses triangular forms to be inherently strong, permitting a flexible column-free interior space. The shape decreases the bulkiness of its appearance and reduces wind at street level. Atriums allow stack ventilation.

Windows in the lightwells open automatically to augment the air conditioning system with natural ventilation, an occurrence anticipated to save energy for up to 40% of the year.

The floorplans are shaped like flowers, with a circular perimeter indented by 6 triangular light courts. The indentations remain a constant size at each level, while the space between them diminishes.

The steel net structure system gives the building columns free interior space. Meanwhile, this system not only performs as the structure, but also holds up the facade, it is a way to reduce the construction materials and guarantee a high quality. The operable window system is controlled to give a good interior environment. In my project, this light weight structural system may be used to reduce mass usage.



british pavillion expo92

Architect: Nicholas Grimshaw and Partners
Theme: The Age of Discovery
Client: Department of Trade Industry
Duration: April thru October 1992
Location: Seville, Spain



Building as living organisms -grow, change, adapt, and react to internal and external forces
Energy conservation/avoidance of wasteIntegration of the building within the city; the building must take part in the web of the city

Water wall

recycling water wall system for cooling
Spans across the façade of the building - 65 meters long, 15 meters high.Pumps lift the water to the top of the fall and then allows it to fall down the wall cooling the eastern side of the building.

Solar Panel Roof

Solar panels shade the roof from direct sunlight,Photocells collecting sun and using electricity to keep building cool and power the water wall

south side

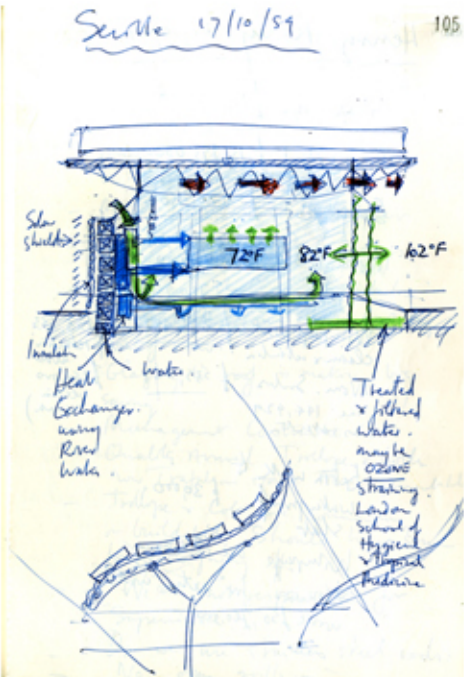
Stretched fabric is shaded by another layer of fabric which prevents sun from directly falling onto the lower levels

west side

Heavy-weight wall -composed of water tanks filled with water or sand that acts a barrier to the sun on the west side of the building

south side

Same fabric as used on the South side is continued; however, light is allowed to come through it to give background lighting



The strategies of water wall, farbic facade phototronic roof panel for roof shading, thermal mass, water tank are combined together in one building, the designer carefully designed the different four facades and roof according the solar conditions. Although it is not a high rise, the thinking of wholly sustainable concept and combined strategies will be adopted in my high rise project.



British Pavilion, Seville Exposition
1992 Nicholas Grimshaw and Partners
(Architecture in Detail)
Colin Davies

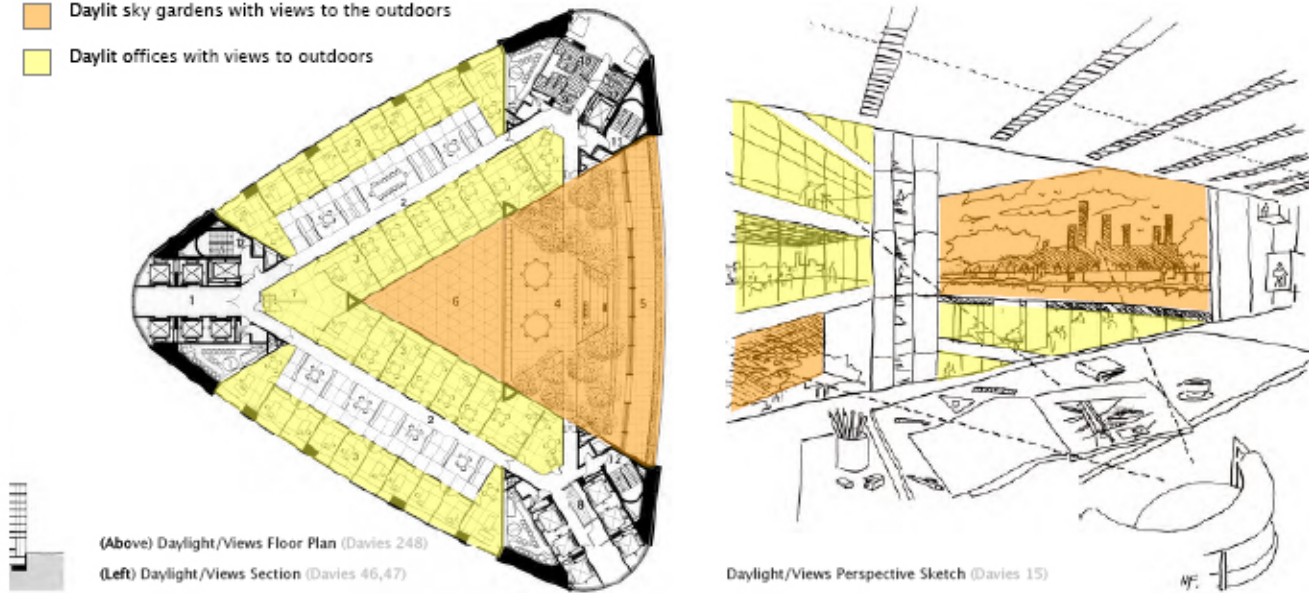
Commerzbank Tower

Commerzbank Headquarters in 1997 it stood as the tallest building in Europe, but what made it revolutionary, was its combination of form, inventiveness, and technical expertise to create an entirely new building type: the humane and socially responsible skyscraper.

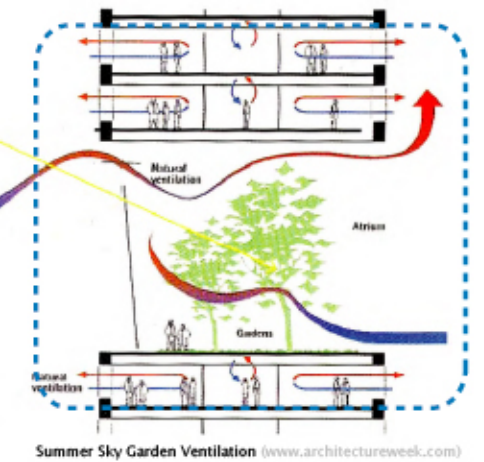
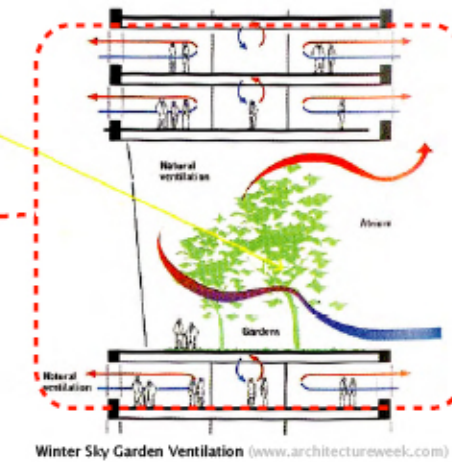
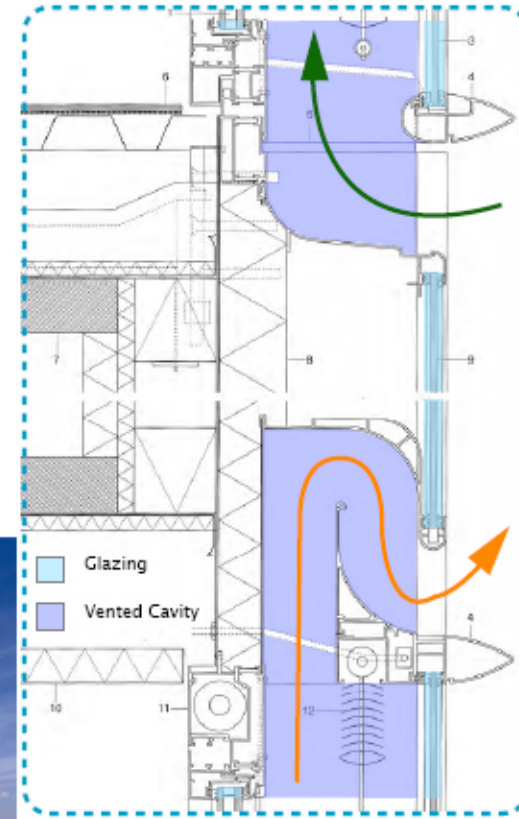
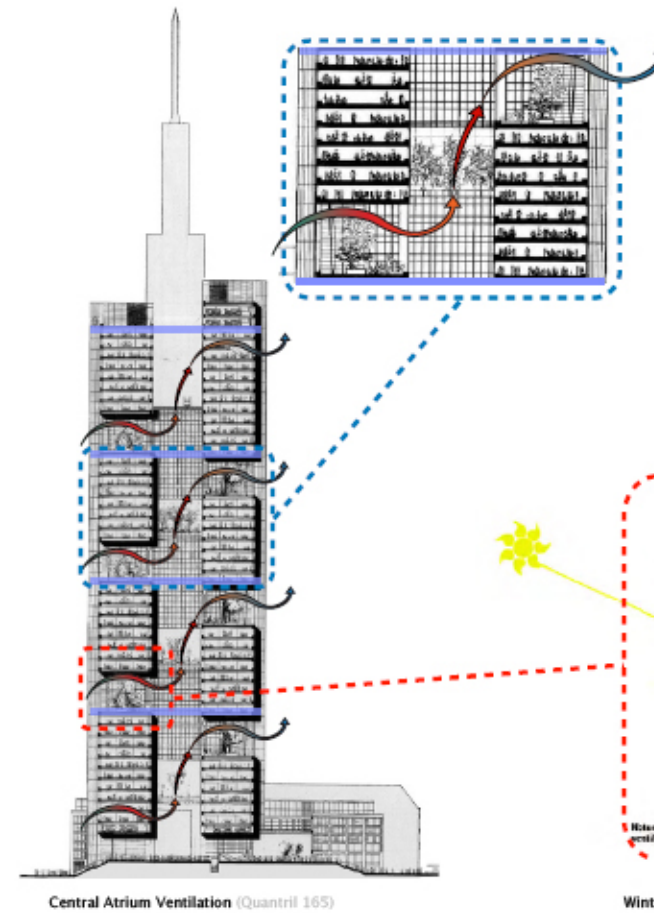
The structure of Norman Fosters Commerzbank Headquarters is essentially a perforated tube in the shape of an equilateral triangle. The structural components work together to form this shape and to resist both gravitational and lateral forces.

Commerzbank Headquarters relies heavily on passive strategies to create a pleasant work environment for its occupants. These strategies include a triangular (doughnut) floor plan, skygardens, and a full-height atrium that allows for every office in the tower to have operable windows for views, natural ventilation, and daylight.

- Daylit sky gardens with views to the outdoors
- Daylit offices with views to outdoors



This building is successfully in resolving social, environmental and economical issues together. the strategy of creating vertical gardens in order to provide social space and modify the indoor environment as well as make natural ventilation is good design. meanwhile, the method of construction and the selection of materials guarantee the low price and high performance in thermal insulation,



- http://www.skyscraperpicture.com/commerzbank_tower.htm
- Commerzbank Frankfurt: Prototype for an Ecological High-Rise

hearst tower

Hearst Tower

300 West 57th Street (Eighth Avenue)

New York City

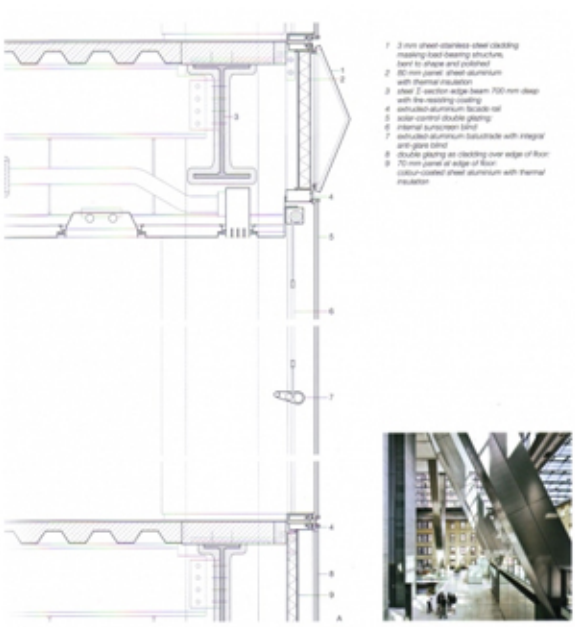
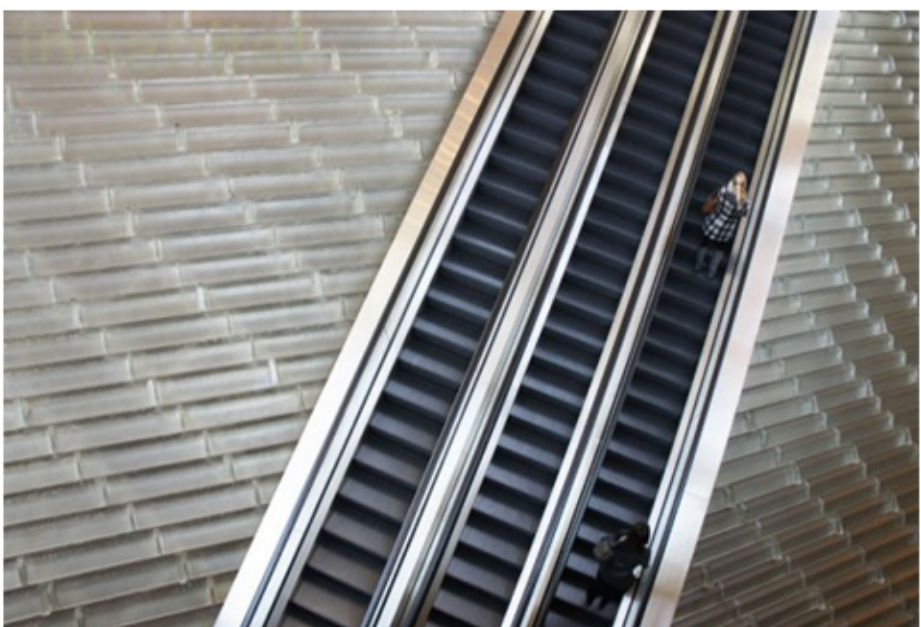
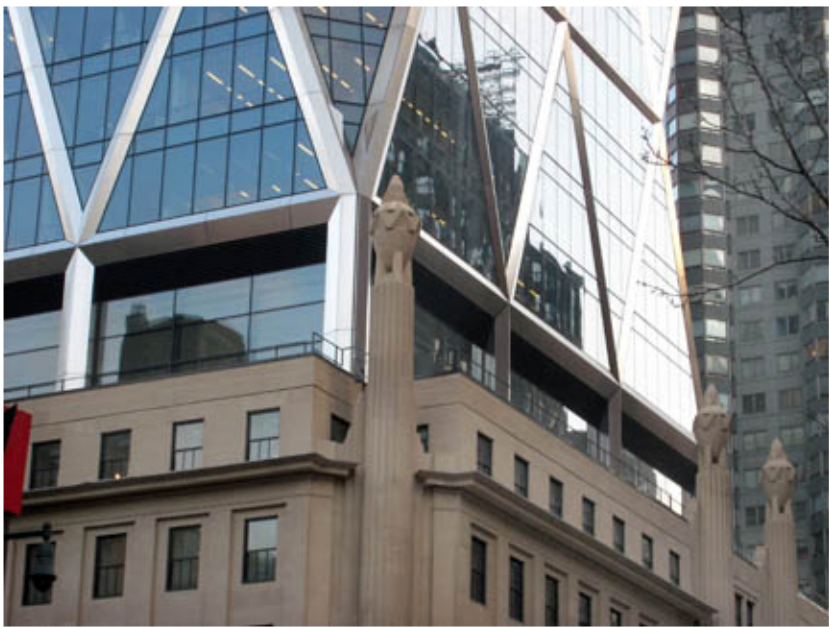
NY 10019

Foster and Partners 2006

The Hearst Tower is Foster's first building in New York. It is also New York's first 'green' building built to the Gold LEED



The Hearst Tower is the first office tower in North America to use a diagonal grid ("diagrid") construction rather than vertical steel beams. This configuration reduces the total steel required by around 20%, contributing to the building's sustainability credentials. Other design features focus on low energy requirements and water conservation in use. About 85% of the original 6-story structure was re-used or recycled.



the calming sound of cascading water, courtesy of Icefall, a 3-story installation that flows beside the escalators. Not only does the display make for a gorgeous lobby, but it helps to cool the space in the summer and humidify the air in the winter. The circulating water is filter rainwater from the rooftop cachement system

This building is a highly eco-friendly high rise, some strategies may be used in my design: a water fall in the lobby to adapt the temperature and humidity, as well as acoustic function, people feel calm when they come in : the construction assembly and materials can be reused after the life of the building: also, the strucutre system give a whole no columns lobby space in the ground lever which make the building engaged people's public activities.

The Bahrain World Trade Center

Type Commercial

Location Manama, Bahrain

Opening 2008

Main contractor Ramboll,
Norwin A/S, [1]

Elsam Engineering

Architect Atkins

The two towers are linked via three skybridges, each holding a 225kW wind turbine, totalling to 675kW of wind power production. Each of these turbines measure 29 m (95 ft) in diameter, and is aligned north, which is the direction from which air from the Persian Gulf blows in. The sail-shaped buildings on either side are designed to funnel wind through the gap to provide accelerated wind passing through the turbines



with three 225 kW turbines on bridges spanning the twin towers, is the first building to integrate commercial-scale wind turbines into a building.



The on-site wind energy source will be used in my high rise project as a method to careate self support energy which is equal to the comsumption or more than the consumption.

This technology will produce clean energy on site and reduce the waste of eletricity druing the transmitting process.

As in the reality phase, the noise and vibration probems will be highly considered to resolve.so carefully detail design in the connection part will be taken.

Meanwhile,in order to generate high velocity,the shape of the high rise building need to design and analysis by specific software druing design.



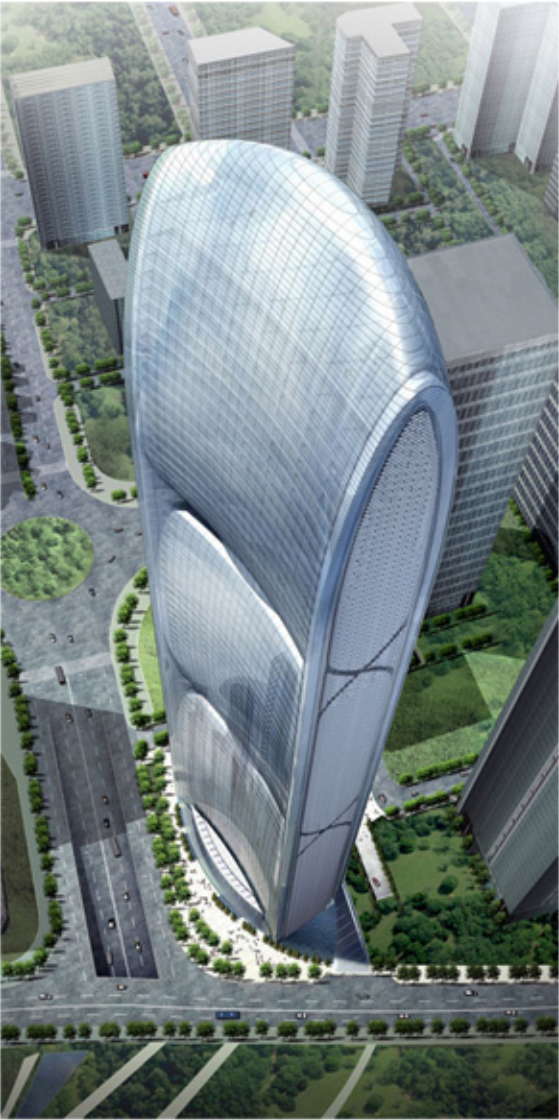
The Adventure Aquarium in Camden, New Jersey, features eight 400-watt and four 1000-watt AeroVironment turbines.

<http://www.buildinggreen.com/auth/article.cfm/2009/4/29/The-Folly-of-Building-Integrated-Wind/>

- price
- efficiency
- Noise and vibration
- vertical-axis turbines
- horizatal-axis turbines



These Swift wind turbines are made of nano-fiber-reinforced polymer. The 1.5 kW turbines start up in 5 mph (2.3 m/s) wind and are claimed to be the quietest horizontal-axis wind turbines on the market, producing just 35 dB of noise.



The Pearl River Tower